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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,525	06/02/2006	Satoshi Ebata	292116US0PCT	6247
22850	7590	10/22/2008	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			HUHN, RICHARD A	
			ART UNIT	PAPER NUMBER
			4131	
			NOTIFICATION DATE	DELIVERY MODE
			10/22/2008	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/581,525	EBATA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	RICHARD A. HUHN	4131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 September 2008.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-6 is/are rejected.
- 7) Claim(s) 4-6 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____ .                                    |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|   | 6) <input type="checkbox"/> Other: _____ .                        |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :20060831; 20070329; 20070806; 20070921; 20080902.

## DETAILED ACTION

### ***Claim Objections***

Claims 4-6 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim may not depend from another multiple dependent claim. See MPEP § 608.01(n). Claims 4-6 have been further treated on the merits, but failure to correct the deficiency will result in the claims being withdrawn from consideration.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication No. 2003/0119961 A1 in view of *Macromolecules 2002*, 35, 8969-8977 (herein “Rhodes”).

9. US '961 discloses a method of preparing cycloolefin addition polymers by polymerizing norbornene-type monomers (abstract), including a multicomponent catalyst (page 10, paragraph 197) that comprises:

a. a palladium compound, for example palladium acetate (page 10, paragraph 199, 3<sup>rd</sup> line)

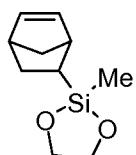
- b. a Lewis acidic boron compound, for example boron trifluoride (page 10, paragraph 206, 2<sup>nd</sup> line)
- c. a phosphine compound (page 10, paragraph 211, 4<sup>th</sup> line)
10. The reference fails to specifically name the composition in which the phosphine compound has a cone angle between 170-200°, or in which ethylene is used as the chain transfer agent (or “molecular weight modifier” in the instant application).
11. Rhodes discloses a method of preparing cycloolefin addition polymers by polymerizing norbornene-type monomers (abstract), including a multicomponent catalyst (page 8973, col 1, paragraph beginning with “Polymerization Using Multicomponent Catalyst Systems”) that comprises:
- d. a palladium compound (page 8975, col 1, paragraph beginning with “To test this hypothesis”, 4<sup>th</sup> line)
- e. an ionic boron compound, for example, Li[B(C<sub>6</sub>H<sub>5</sub>)<sub>4</sub>]·2.5Et<sub>2</sub>O (ibid., 5<sup>th</sup> line)
12. Rhodes teaches that the multicomponent catalyst for this method of polymerization may contain a phosphine compound with a cone angle of about 194° (tri(*o*-tolylphosphine) (ibid., 4<sup>th</sup> line), and further teaches that ethylene may be used as a chain transfer agent (page 8974, col 2, paragraph beginning with “Effect of α-Olefin Chain Transfer Agents”, 5<sup>th</sup> line).
13. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have used the phosphine compound and chain transfer agent taught by Rhodes for the method of US ‘961 because Rhodes teaches that a phosphine

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compound with a cone angle between 170-200°, and ethylene may be used for the polymerization of cycloolefin compounds using multicomponent catalysts.

14. Further as to claim 2: US '961 further discloses that the multicomponent catalyst can contain organoaluminum compounds (page 5, paragraph 59, 2<sup>nd</sup> line). Examples are given on page 10, paragraph 204.

15. Further as to claim 3: US '961 further discloses that the cycloolefin monomers may include compounds of instant formula (1) in the amount of 60-99.5% (see page 9, paragraph 179, labeled therein "repeating unit (b)'), and compounds of instant formula (2) with a silyl group in the amount of 0.5-30% (see page 8, paragraph 127, labeled therein "repeating unit (a)'). See formulas (5) and (6) and subsequent examples of these repeating units (a) and (b), respectively, which conform to instant formulas (2) and (1), respectively. Paragraph 90 discloses 5-[1'-methyl-2'5'-dioxa-1'-silacyclopentyl]-



bicyclo[2.2.1]hept-2-ene, which corresponds to instant formula (2)-2.



Paragraph 132 discloses 5-ethyl-bicyclo[2.2.1]hept-2-ene, Et, which corresponds to instant formula (1).

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16. Further as to claim 4: US '961 discloses palladium acetate (page 10, paragraph 199, 3<sup>rd</sup> line), as recited above, which is a palladium salt of the organic carboxylic acid acetic acid.

17. Further as to claim 5: US '961 discloses that the molecular weight modifier may be used in the amount of 1.2 mol % (page 16, example 1, paragraph 335) (15 mmol styrene / 1250 mmol monomers = 1.2 %). As applied above, Rhodes teaches that ethylene may be used as a molecular weight modifier.

18. Further as to claim 6: US '961 discloses that the monomer bicyclo[2.2.1]hept-2-ene may be present in the amount of 95% of all the monomers (page 16, example 1, paragraph 335) (1187.5 mmol / 1250 mmol = 95%). US '961 also discloses that the polymerization solvent may be the alicyclic hydrocarbon solvent cyclohexane (see page 11, paragraph 238, 7<sup>th</sup> line).

### ***Conclusion***

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure

a. US Patent No. 5,569,730 discloses multicomponent catalysts for norbornene-type polymerizations.

b. US Patent No. 6,455,650 and WO 00/20472 disclose multicomponent catalysts for norbornene and silyl-group containing norbornene-type polymerizations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RICHARD A. HUHN whose telephone number is (571) 270-7345. The examiner can normally be reached on Monday to Friday, 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on (571) 272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R. Sample/  
Supervisory Patent Examiner  
Art Unit 4131

/R. A. H./  
Examiner, Art Unit 4131